Multiple connections
H_2O 2 Air intercooled
3 cooling radiators
Specialized high end car

Removing and installing coolant radiator »

Remove the radiator of the high-temperature coolant circuit

REP-TAT-P-1711-01-G11_B58_2

Database pay "in" rate

⚠ WARNING

Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.

i TECHNICAL INFORMATION

Life-long fill of coolant!

Do not reuse used coolant.

When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The cooling system must therefore be emptied and refilled.

In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.

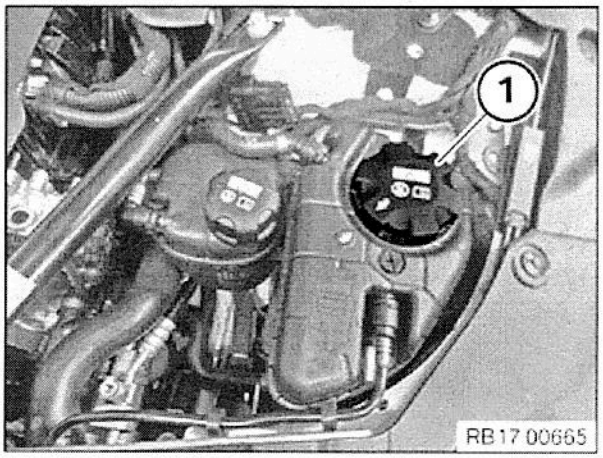
i TECHNICAL INFORMATION

Notes on work at the cooling system form the basis of these repair instructions and must be complied with at all times.

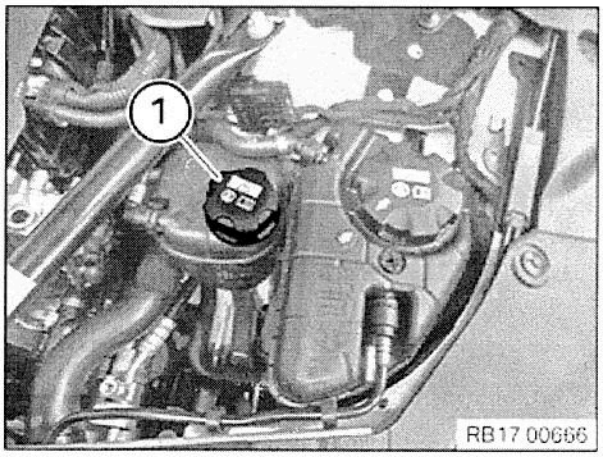
For additional information see: 17 00 ... Instructions for repair work on cooling system

i TECHNICAL INFORMATION

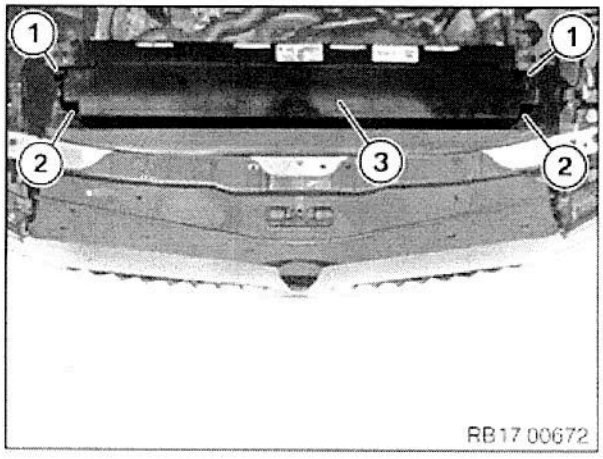
Collect and dispose of emerging fluids. Observe country-specific waste disposal regulations.



- Loosen sealing cap (1).

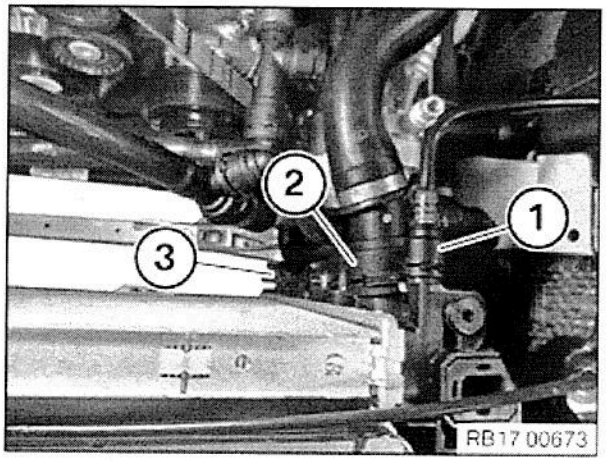


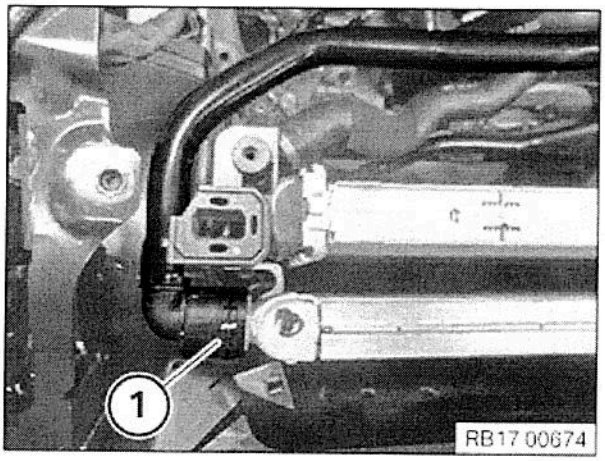
- Loosen sealing cap (1).



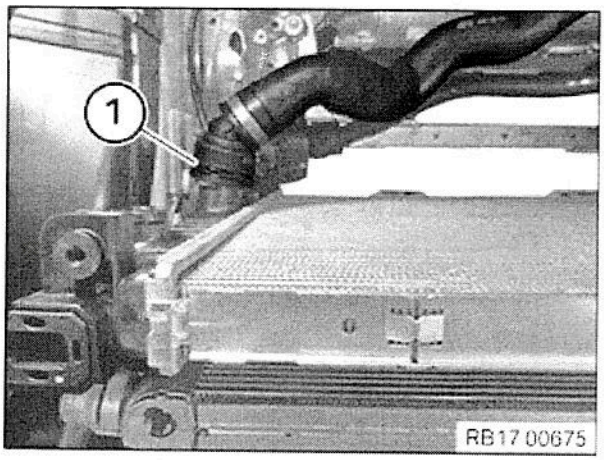
- Unlock the locks (1).
- Unlock the locks (2).
- Remove the cover (3) of the top cooling module.

- Unlock and loosen coolant line (1).
- Unlock and loosen coolant line (2).
- Unlock and loosen coolant line (3).
- Catch and dispose of escaping coolant.



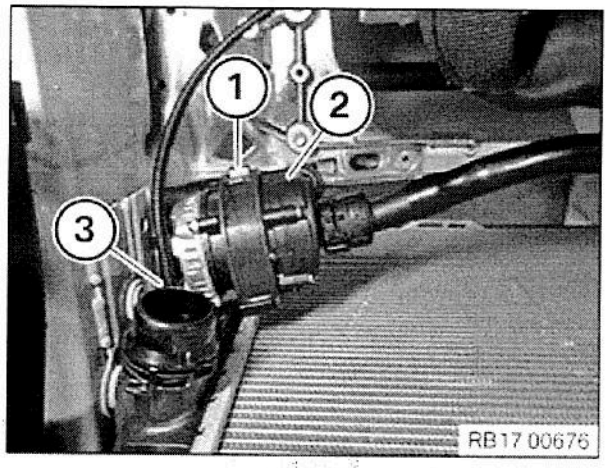


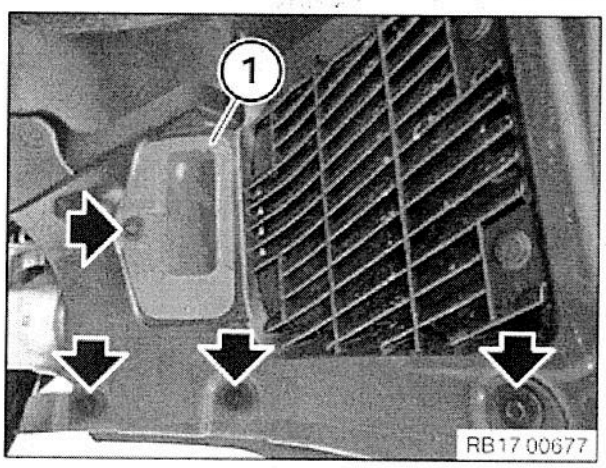
- Unlock and loosen coolant line (1).
- Catch and dispose of escaping coolant.



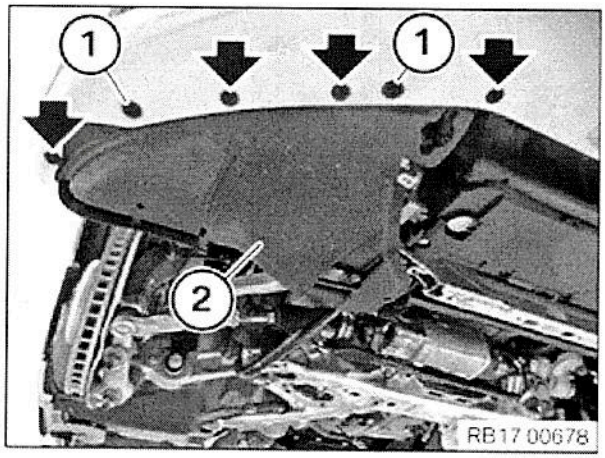
- Unlock and loosen coolant line (1).
- Catch and dispose of escaping coolant.

- Loosen the holder (1).
- Remove the electric coolant pump (2) and put to one side.
- Loosen clamp (3).



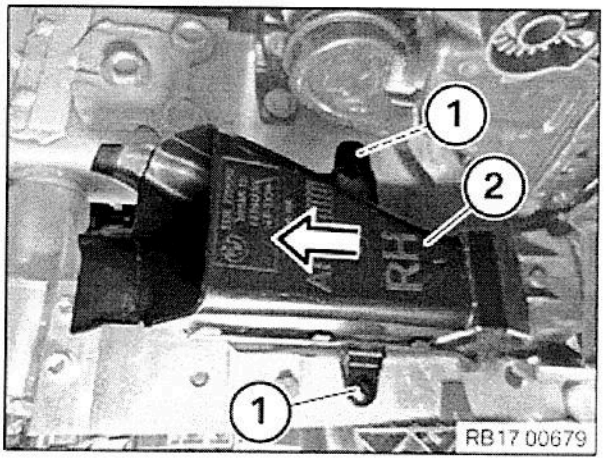


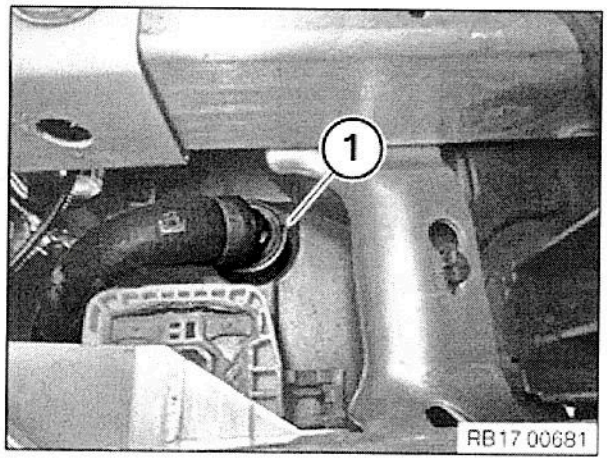
- Remove screws (arrows).
- Thread out air duct (1) and remove.



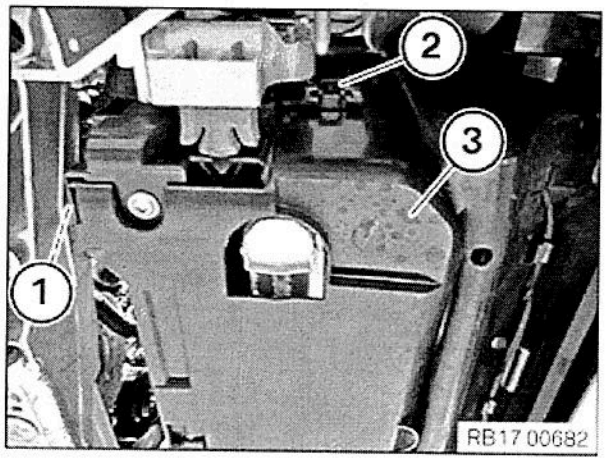
- Release the clamps (arrows).
- Loosen screws (1).
- Guide out and remove the cover (2).

- Loosen clamps (1).
- Guide out air duct (2) in direction of arrow and remove.



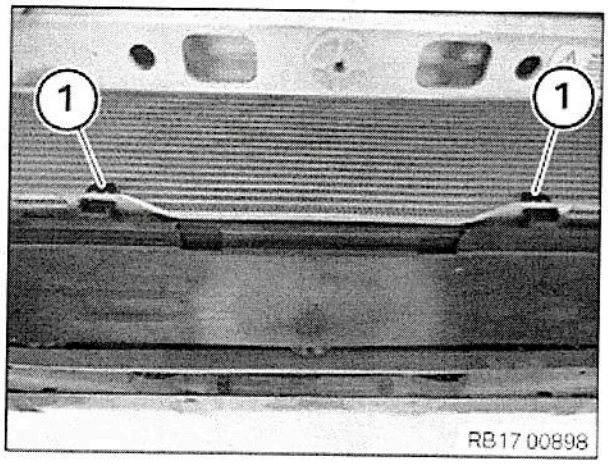


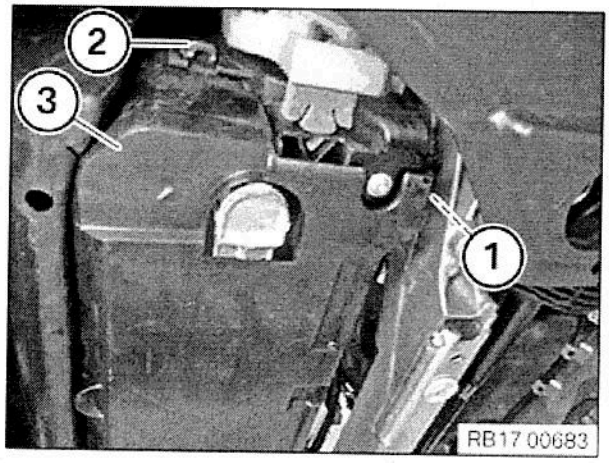
- Unlock and loosen coolant line (1).
- Catch and dispose of escaping coolant.



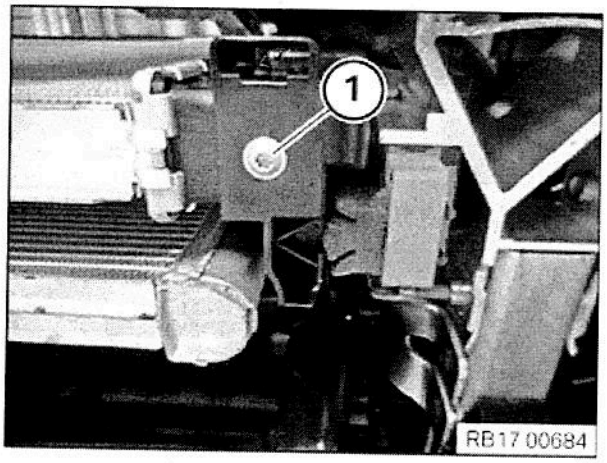
- Unlock the lock (1).
- Unlock lock (2).
- Release the cover (3) of the cooling module at the bottom.

- Unlock the locks (1).



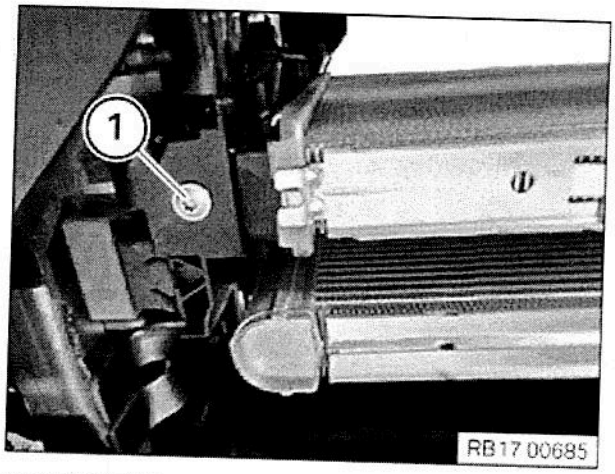


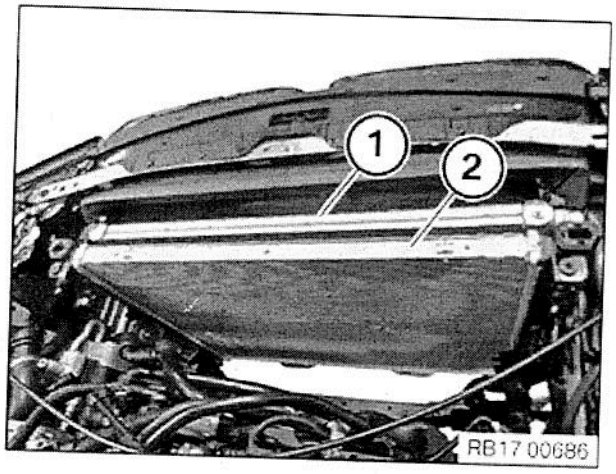
- Unlock the lock (1).
- Unlock lock (2).
- Remove the cover (3) of the bottom cooling module.



- Loosen screw (1).

- Loosen screw (1).





- Remove the radiator of the low-temperature coolant circuit (1) including the radiator of the high-temperature coolant circuit (2).

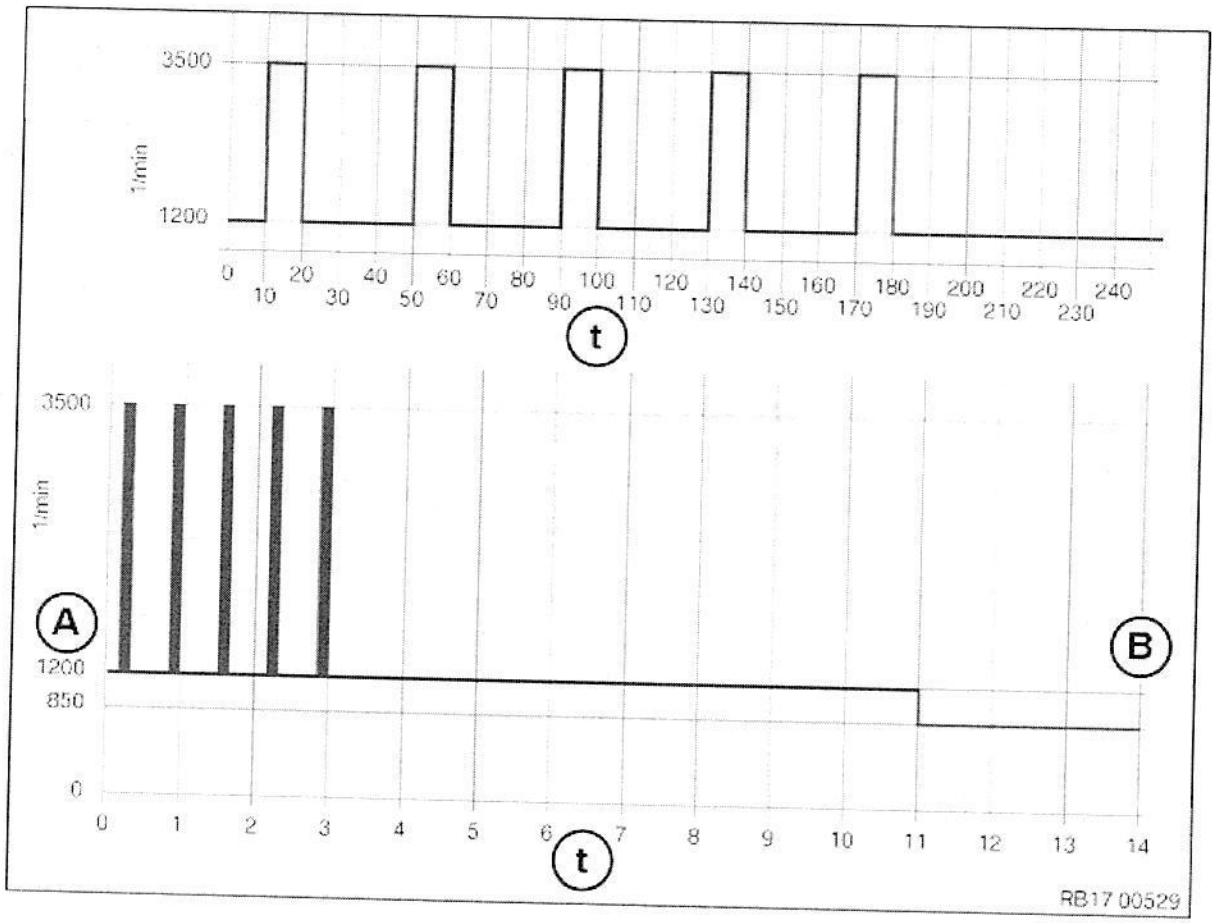
[redacted]

Bleed the cooling system and check it for watertightness with the special tool »

Bleed the high-temperature coolant system

REP-TAT-P-1700-12-G11_B58

Bleed the high-temperature coolant system



A = Cooling system bleeding

B= increased idle speed

t = Time

routine
finished

i TECHNICAL INFORMATION

Filling **without** the vacuum filler device (watering can filling) is **not permitted**.

Non-compliance will result in danger of component damage and/or engine damage.

Filling specification **absolutely must** be adhered to.

The operation of the vehicle is not permitted unless the filling procedure has been completed. Otherwise, functional limitations (degradation) and/or overheating may occur.

A bleeding procedure is required after a part has been exchanged in the cooling system and/or after refilling the cooling system.

i TECHNICAL INFORMATION

Before starting the automatic cooling system bleeding routine, make sure that **both coolant circuits** are **filled**. The cooling system bleeding routine is automatically started simultaneously for both coolant circuits. If the cooling system bleeding routine is started while one of the coolant circuits is empty, there is a risk of damage to the electric coolant pump when running it dry.

Make sure that terminal 15 is not disconnected for the bleeding procedure. Switch on low-beam headlights and hazard warning lights. If the low-beam headlights and hazard warning lights are not switched on, the ignition (terminal 15) will switch off automatically after a certain period of time and interrupt the bleeding procedure.

i TECHNICAL INFORMATION

Life-long fill of coolant!

Do not reuse used coolant.

When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The cooling system must therefore be emptied and refilled.

In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.

i

During the cooling system bleeding routine, the fan may sporadically activate.

- Remove the vacuum filler device from the coolant expansion tank of the high-temperature coolant system.
- Open the bleeder screw on the coolant expansion tank for the high-temperature coolant circuit and close it again after approx. **10 s**.

  You can close the bleeder screw prior to expiry of the 10 s once coolant escapes.
- Adjust the filling level in the coolant expansion tank of the high-temperature cooling system to the maximum mark.
- Close the sealing cap on the coolant expansion tank of the high--temperature cooling circuit.
- Connect battery charger.
- Close driver's seat belt.
- Switch on the ignition by quickly operating the START-STOP button three times.
- Adjust the heating to **maximum** temperature and adjust the blower to the **lowest** stage.
- Floor the accelerator pedal and hold for **15 s**.

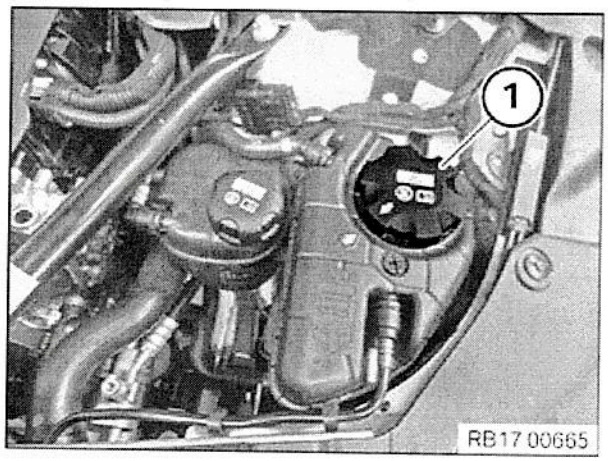
  The automatic cooling system bleeding routine will be initiated.
- Start engine.

  The Idle speed is automatically increased to **1200 rpm**.
- **Operate the accelerator pedal up to approximately 3500 rpm, and maintain the engine speed for 10 s.**
- Hold idle speed for **30 s**.
- **Operate the accelerator pedal up to approximately 3500 rpm, and maintain the engine speed for 10 s.**
- Hold idle speed for **30 s**.
- **Operate the accelerator pedal up to approximately 3500 rpm, and maintain the engine speed for 10 s.**

- Hold idle speed for **30 s**.
- **Operate the accelerator pedal up to approximately 3500 rpm, and maintain the engine speed for 10 s.**
- Hold idle speed for **30 s**.
- **Operate the accelerator pedal up to approximately 3500 rpm, and maintain the engine speed for 10 s.**

  The cooling system bleeding routine has finished approximately **11 min** after the engine starts.

  The engine speed drops to the **idle speed** again.
- Switch off engine.
- Allow the engine to cool down.
- Adjust the filling level in the coolant expansion tank of the high-temperature coolant circuit to 200 ml above the maximum mark.



- Close the sealing cap (1) until the **arrows** are flush.

Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature) »

Bleeding the low-temperature cooling system

REP-TAT-P-1700-12-G11_B58_2

i TECHNICAL INFORMATION

Life-long fill of coolant!

Do not reuse used coolant.

When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The cooling system must therefore be emptied and refilled.

In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.

i TECHNICAL INFORMATION

Before starting the automatic cooling system bleeding routine, make sure that **both coolant circuits** are **filled**. The cooling system bleeding routine is automatically started simultaneously for both coolant circuits. If the cooling system bleeding routine is started while one of the coolant circuits is empty, there is a risk of damage to the electric coolant pump when running it dry.

Make sure that terminal 15 is not disconnected for the bleeding procedure. Switch on low-beam headlights and hazard warning lights. If the low-beam headlights and hazard warning lights are not switched on, the ignition (terminal 15) will switch off automatically after a certain period of time and interrupt the bleeding procedure.

i TECHNICAL INFORMATION

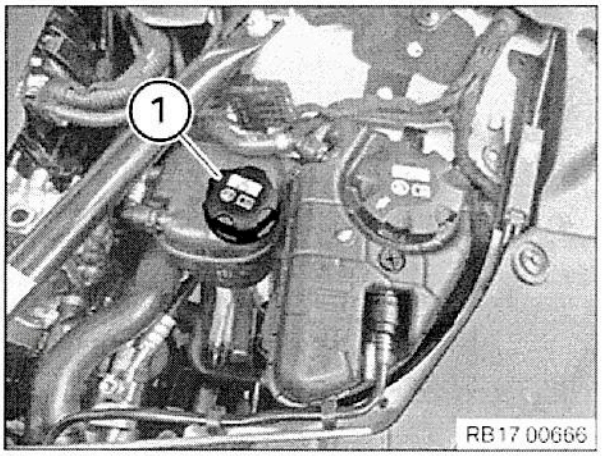
Filling **without** the vacuum filler device (watering can filling) is **not permitted**.

Non-compliance will result in danger of component damage and/or engine damage.

Filling specification **absolutely must** be adhered to.

The operation of the vehicle is not permitted unless the filling procedure has been completed. Otherwise, functional limitations (degradation) and/or overheating may occur.

A bleeding procedure is required after a part has been exchanged in the cooling system and/or after refilling the cooling system.



- Remove the vacuum filler device from the coolant expansion tank of the low-temperature coolant circuit.
- Adjust the coolant level in the coolant expansion tank of the low-temperature coolant circuit to the maximum mark.
- Close the sealing cap (1) on the coolant expansion tank of the low-temperature coolant circuit.
- Connect battery charger.
- Switch the ignition on.
- Switch the low-beam headlights and hazard warning headlights on.
- Close driver's door.
- Adjust the heating to **maximum** temperature and adjust the blower to the **lowest** stage.
- Floor the accelerator pedal and hold for 15 s.

  The automatic cooling system bleeding routine will be initiated.

  The cooling system bleeding routine ends automatically after approximately 11 minutes.
- Adjust the filling level in the coolant expansion tank of the low-temperature coolant circuit to the maximum mark.

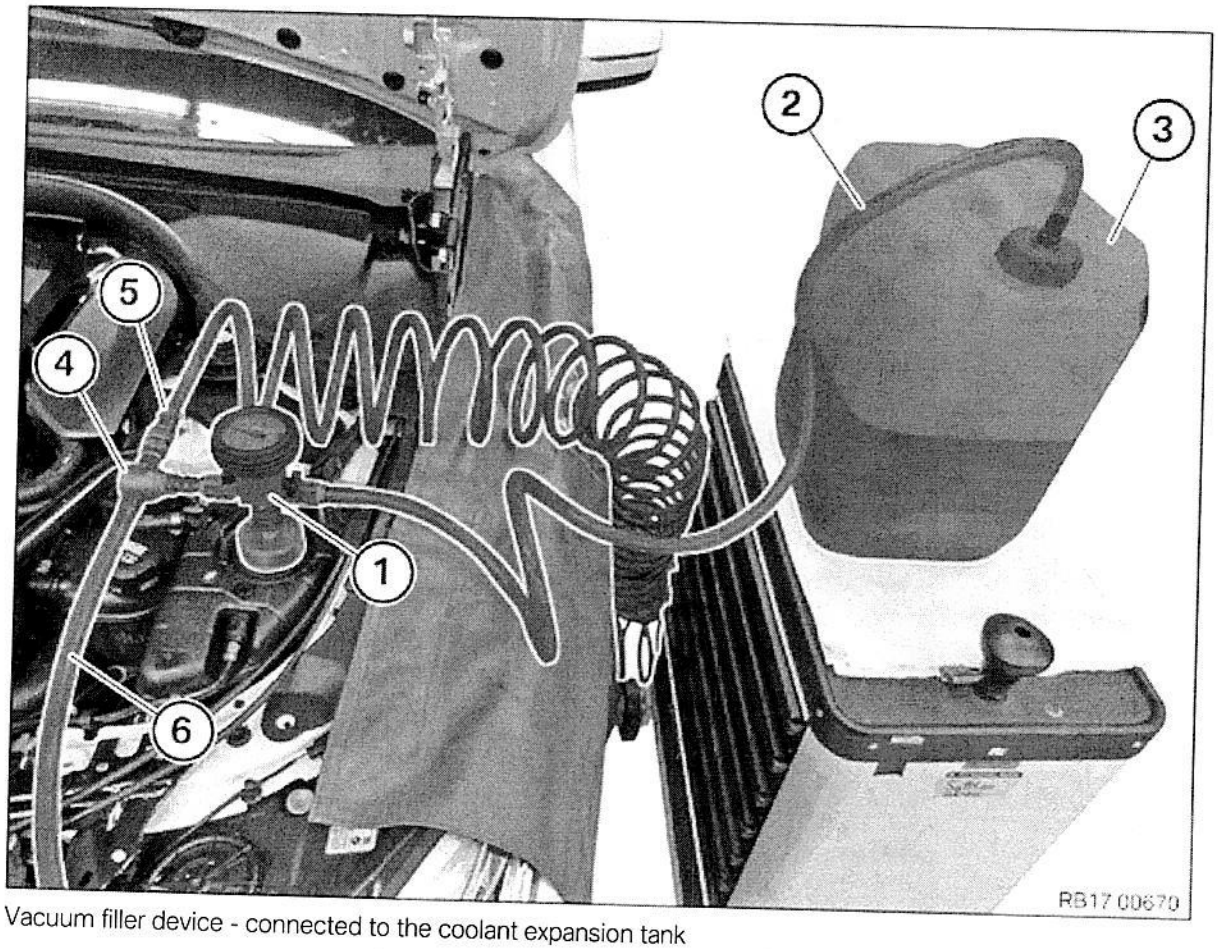
[redacted]

Bleed the cooling system and check it for watertightness with the special tool »

Fill the high-temperature cooling system with the vacuum filler device

REP-TAT-P-1700-04-G11_B58

Vacuum filler device



Vacuum filler device - connected to the coolant expansion tank

1 Vacuum filler device with pressure gauge and shutoff valves

2 Filling hose

3 Fluid tank with coolant

4 Venturi nozzle

5 Compressed air connection (maximum of 6 bar)

6 Out-going hose (lead out-going hose into a collecting vessel)

Prerequisite

The coolant expansion tank for the cooling system must be empty. The fluid tank of the vacuum filler device must have a sufficient quantity of premixed coolant, 1 l to 2 l more than the specified capacity for the vehicle. The fluid tank of the vacuum filler device must be positioned at the same height as the coolant expansion tank. The compressed air connection must have a pressure of 6 bar. Ignition is switched off.

i TECHNICAL INFORMATION

Follow notes for repair work on the cooling system.

For additional information see:

1.0 Requirements to coolant

2.0 change interval, change and check of coolant, disposal, cleaning the cooling system

3.0 Approved antifreeze and corrosion inhibitors (except for MINI R56 diesel)

i TECHNICAL INFORMATION

Life-long fill of coolant!

Do not reuse used coolant.

When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The cooling system must therefore be emptied and refilled.

In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.

i TECHNICAL INFORMATION

Mixing different coolants is not permitted.

i TECHNICAL INFORMATION

Filling **without** the vacuum filler device (watering can filling) is **not permitted**.

Non-compliance will result in danger of component damage and/or engine damage.

Filling specification **absolutely must** be adhered to.

The operation of the vehicle is not permitted unless the filling procedure has been completed. Otherwise, functional limitations (degradation) and/or overheating may occur.

A bleeding procedure is required after a part has been exchanged in the cooling system and/or after refilling the cooling system.

i TECHNICAL INFORMATION

Make sure that the ignition (terminal 15) is switched off prior to creating the vacuum with the vacuum filler device.

- Select a suitable adapter (Y) from the set of special tools **0 494 417 (17 0 100)**:

Type	Engine	Adapter (Y) from 17 0 100
G11/G12/G30/G31/G32/G38	B48/B58	17 0 103

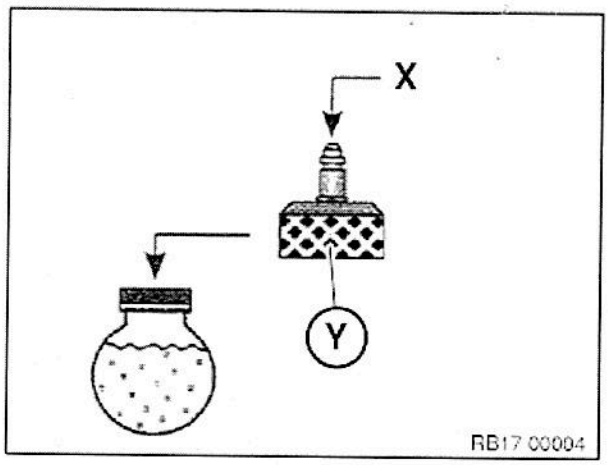
- The fluid tank of the vacuum filler device must be filled with 1 l to 2 l more than the specified capacity of coolant for the vehicle.

Technical data

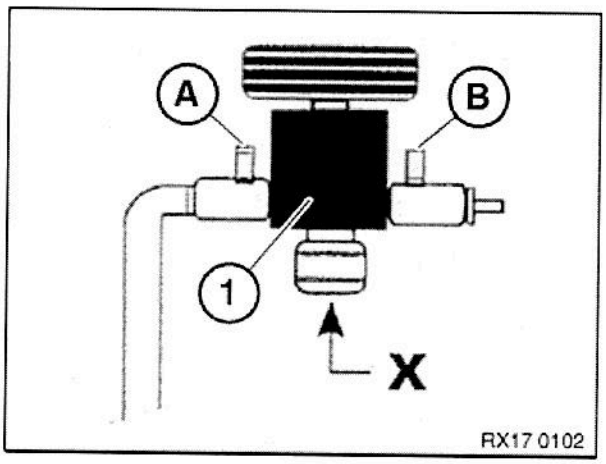
Cooling system capacity

B48 (high temperature cooling circuit)	9,9 l
B48 (low temperature cooling circuit)	4,0 l

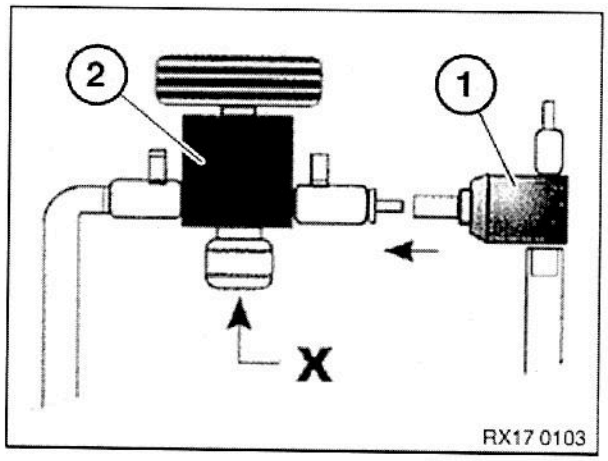
- Connect the selected adapter (Y) to the coolant expansion tank.



- Connect vacuum filler device to connection (X) of the adapter.



- Check whether both shutoff valves (A) and (B) of the vacuum filler device (1) are closed.
- Connect and lock connection (X) to the coolant expansion tank.

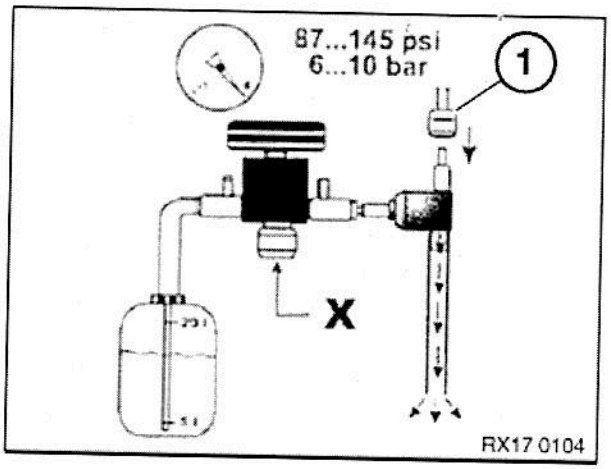


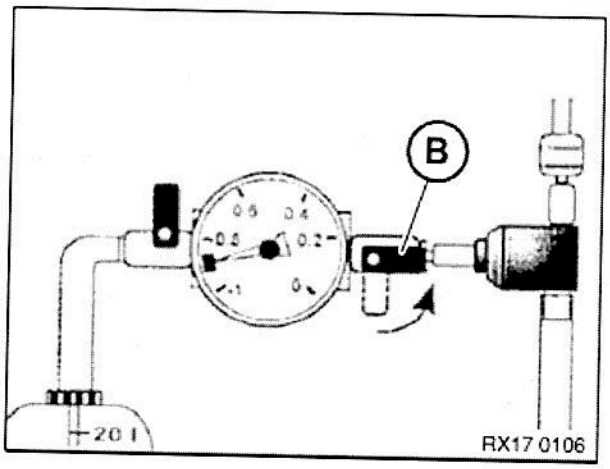
- Connect Venturi nozzle (1) to the vacuum filler device (2).

  (X)is the connection on the coolant expansion tank.

- Connect compressed air (1).

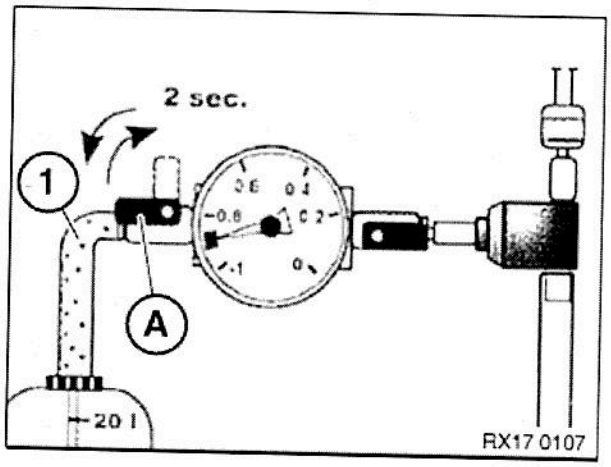
  (X)is the connection on the coolant expansion tank.





- Open shutoff valve (B).

  The venturi nozzle produces a flow noise.



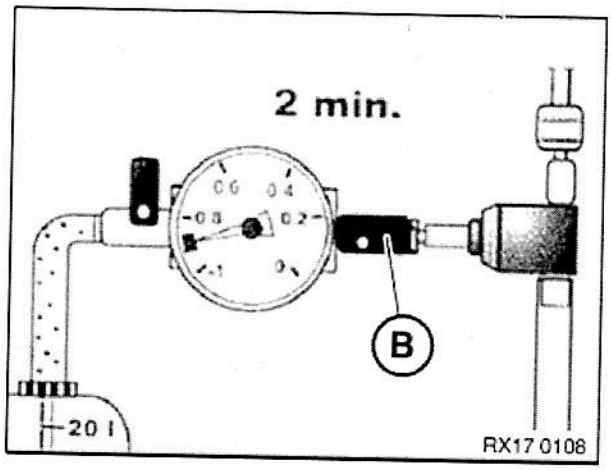
- Open shutoff valve (A) until the filling hose (1) is full without bubbles.
- Close shutoff valve (A) again.

» The filling hose (1) has now been bled.

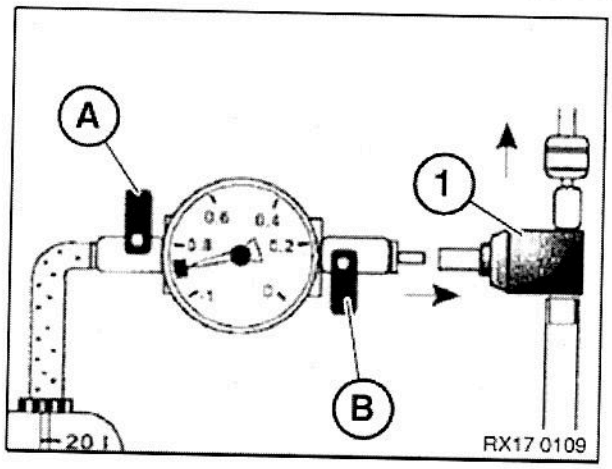
- Check the coolant hoses for porosity and renew porous coolant hoses as required.

i TECHNICAL INFORMATION

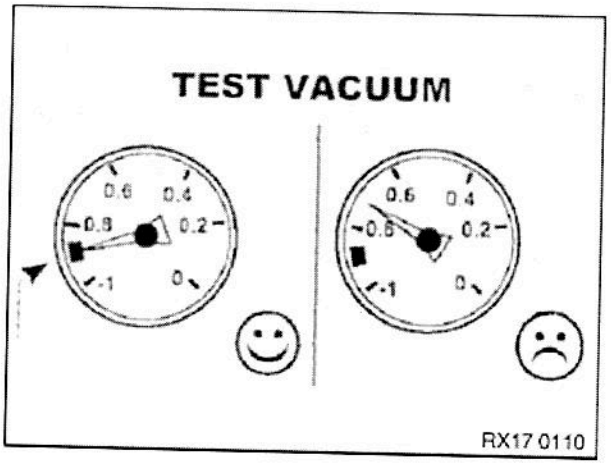
The coolant hoses contract during vacuum build-up.



- After having established a vacuum in the coolant circuit of between -0.7 to -0.95 bar (duration approximately 2 min), close the shutoff valve (B).



- Check whether the shutoff valves (A) and (B) are closed.
- Disconnect the Venturi nozzle (1).



Check

- Make sure the vacuum in the coolant circuit is maintained for at least 30 seconds.

Result

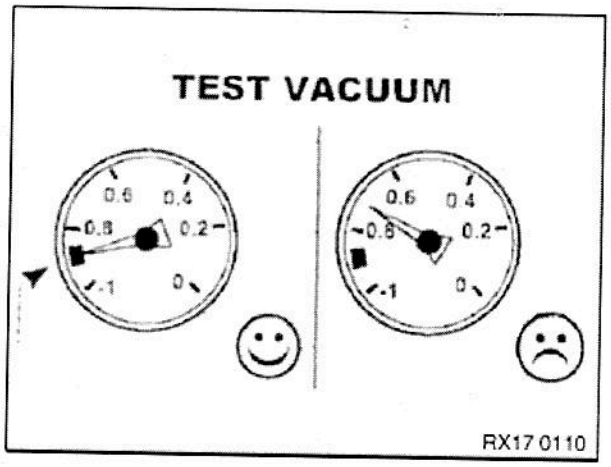
» Vacuum drops.

Measure

- Look for the leak, repair it and start the filling procedure from the beginning.

Check

- Make sure the vacuum in the coolant circuit is maintained for at least 30 seconds.

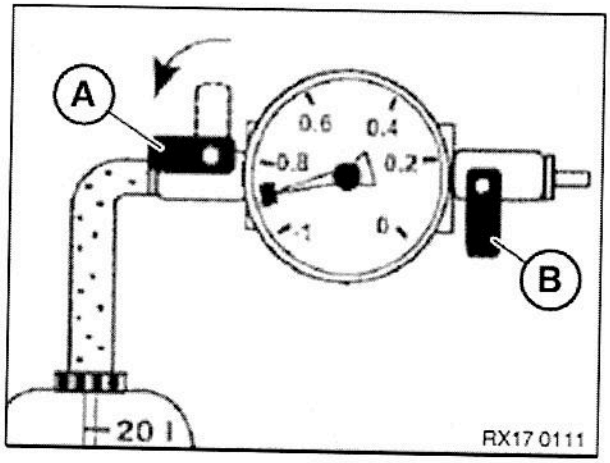


Result

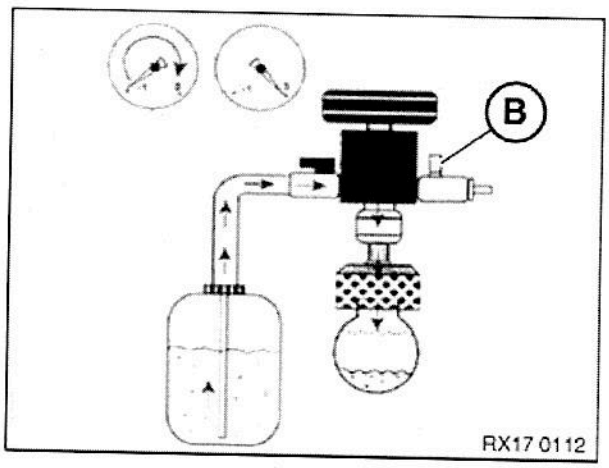
» Vacuum remains constant.

Measure

- Continue with filling.

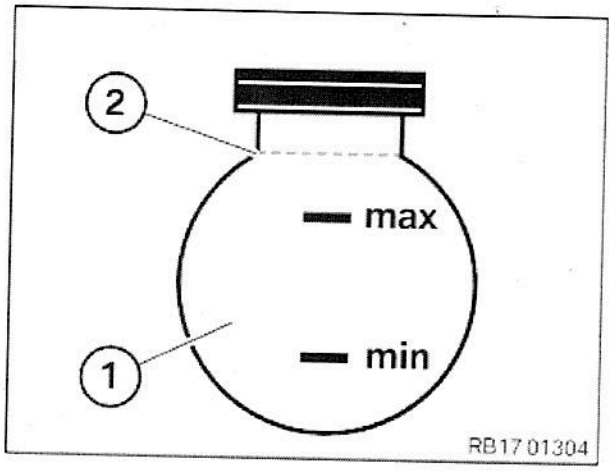


- Keep shutoff valve (B) closed during the filling process.
- To fill the cooling system, open the shutoff valve (A) to the fluid tank of the vacuum filler device.



- Stop the filling procedure when the needle in the pressure measuring device is on 0 bar or it no longer drops.
- If necessary, reduce remaining vacuum. Open the shutoff valve (B).

- Remove the vacuum filler device with the adapter from the high temperature coolant expansion tank (1).



- Top up the coolant level in the high temperature coolant expansion tank (1) to the lower edge of the coolant filler neck (2) in the high temperature coolant expansion tank (1).
- After filling the cooling system with the vacuum filler device, **also** run the cooling system bleeding routine.

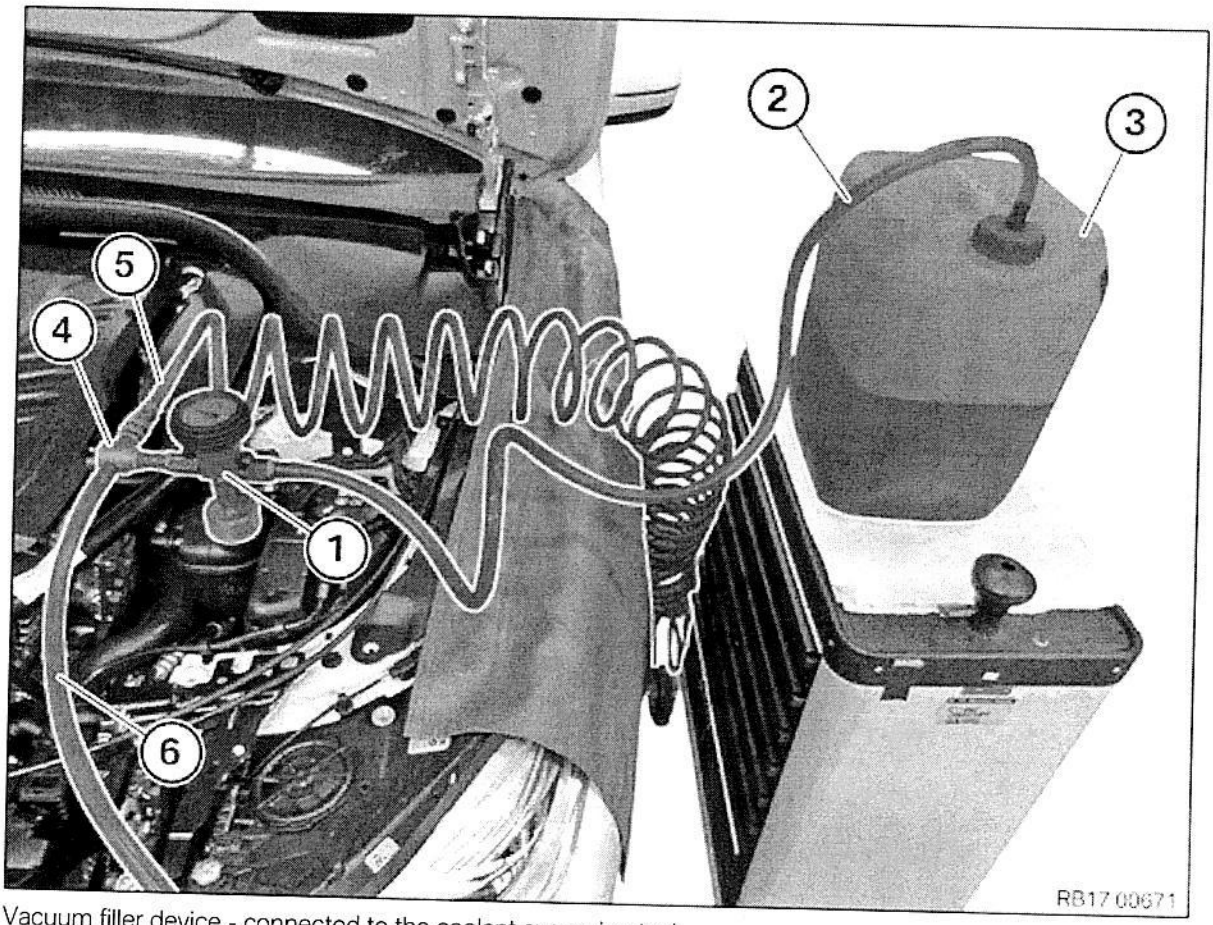
[redacted]

Bleed the cooling system and check for watertightness with the special tool (coolant circuit for low temperature) »

Filling the low-temperature cooling system with the vacuum filler device

REP-TAT-P-1700-04-G11_B58_2

Vacuum filler device



Vacuum filler device - connected to the coolant expansion tank

1 Vacuum filler device with pressure gauge and shutoff valves

2 Filling hose

3 Fluid tank with coolant

4 Venturi nozzle

5 Compressed air connection (maximum of 6 bar)

6 Out-going hose (lead out-going hose into a collecting vessel)

Prerequisite

The coolant expansion tank for the cooling system must be empty. The fluid tank of the vacuum filler device must have a sufficient quantity of premixed coolant, 1 l to 2 l more than the specified capacity for the vehicle. The fluid tank of the vacuum filler device must be positioned at the same height as the coolant expansion tank. The compressed air connection must have a pressure of 6 bar. Ignition is switched off.

i TECHNICAL INFORMATION

Follow notes for repair work on the cooling system.

For additional information see:

1.0 Requirements to coolant

2.0 change interval, change and check of coolant, disposal, cleaning the cooling system

3.0 Approved antifreeze and corrosion inhibitors (except for MINI R56 diesel)

i TECHNICAL INFORMATION

Life-long fill of coolant!

Do not reuse used coolant.

When replacing and removing components which rely on the corrosion protection effect of the coolant, it is essential to change the coolant. The cooling system must therefore be emptied and refilled.

In the case of other removal work involving the draining of part quantities of coolant, the coolant level must be topped up with new coolant.

i TECHNICAL INFORMATION

Mixing different coolants is not permitted.

i TECHNICAL INFORMATION

Filling **without** the vacuum filler device (watering can filling) is **not permitted.**

Non-compliance will result in danger of component damage and/or engine damage.

Filling specification **absolutely must** be adhered to.

The operation of the vehicle is not permitted unless the filling procedure has been completed. Otherwise, functional limitations (degradation) and/or overheating may occur.

A bleeding procedure is required after a part has been exchanged in the cooling system and/or after refilling the cooling system.

i TECHNICAL INFORMATION

Make sure that the ignition (terminal 15) is switched off prior to creating the vacuum with the vacuum filler device.

- Select a suitable adapter (Y) from the set of special tools **0 494 417 (17 0 100)**:

Type	Engine	Adapter (Y) from 17 0 100
G11/G12/G30/G31/G32/G38	B48/B58	17 0 109

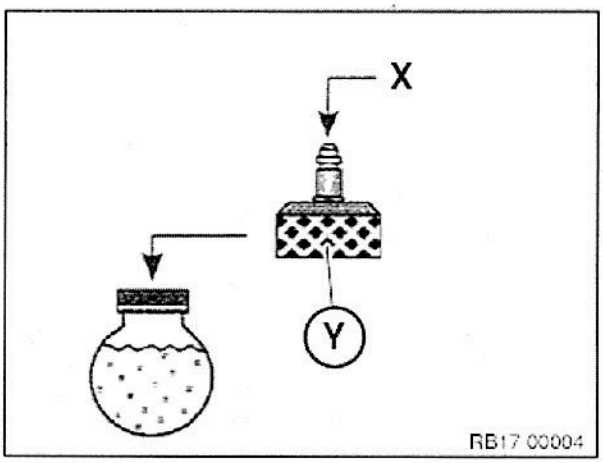
- The fluid tank of the vacuum filler device must be filled with 1 l to 2 l more than the specified capacity of coolant for the vehicle.

Technical data

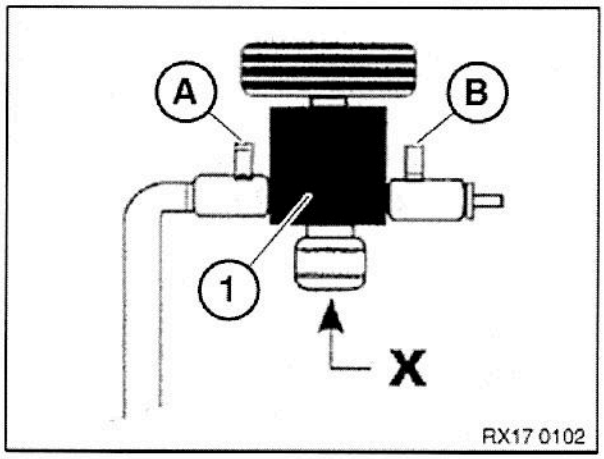
Cooling system capacity

B48 (high temperature cooling circuit)	9,9 l
B48 (low temperature cooling circuit)	4,0 l

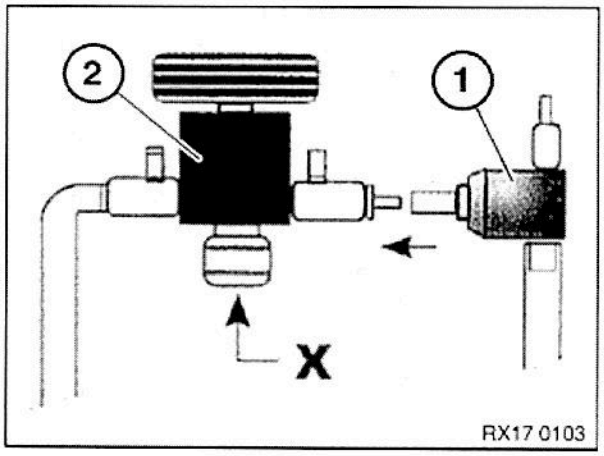
- Connect the selected adapter (Y) to the coolant expansion tank.



- Connect vacuum filler device to connection (X) of the adapter.



- Make sure that the shutoff valves (A) and (B) of the vacuum filler device (1) are closed.
- Connect and lock connection (X) to the coolant expansion tank.

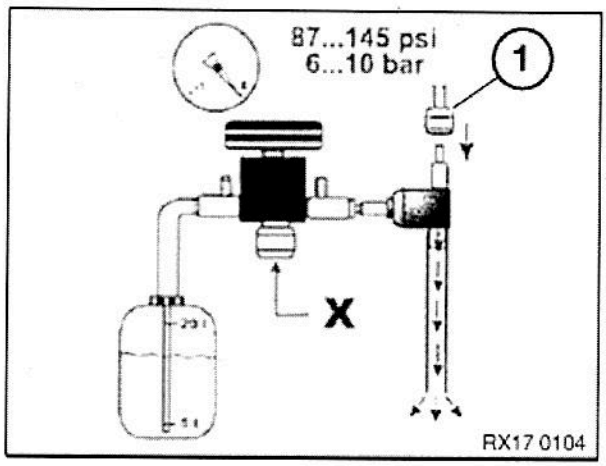


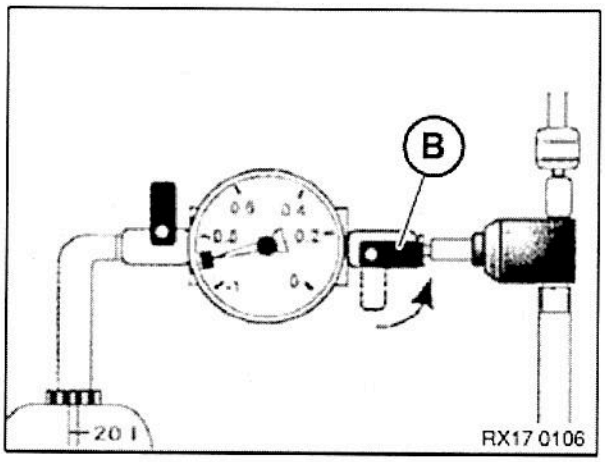
- Connect Venturi nozzle (1) to the vacuum filler device (2).

  (X)is the connection on the coolant expansion tank.

- Connect compressed air (1).

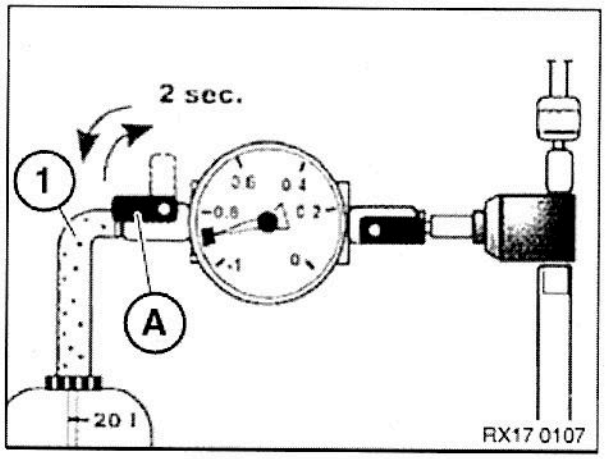
  (X)is the connection on the coolant expansion tank.





- Open shutoff valve (B).

  The venturi nozzle produces a flow noise.



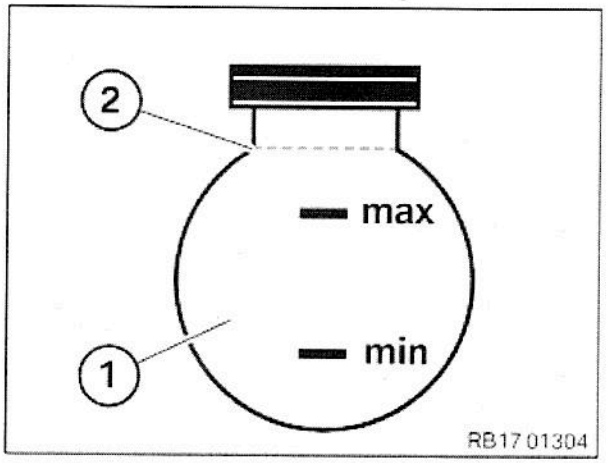
- Open shutoff valve (A) until the filling hose (1) is full without bubbles.
- Close shutoff valve (A) again.

» The filling hose (1) has now been bled.

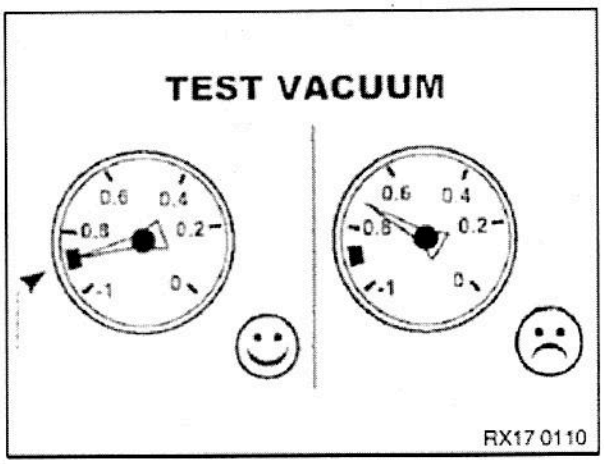
- Check the coolant hoses for porosity and renew porous coolant hoses as required.

i TECHNICAL INFORMATION

The coolant hoses contract during vacuum build-up.



- Adjust the coolant level in the low-temperature coolant expansion tank (1) up to the lower edge of the coolant filler neck (2) of the low-temperature coolant expansion tank (1).
- After filling the cooling system with the vacuum filler device, **also** run the cooling system bleeding routine.

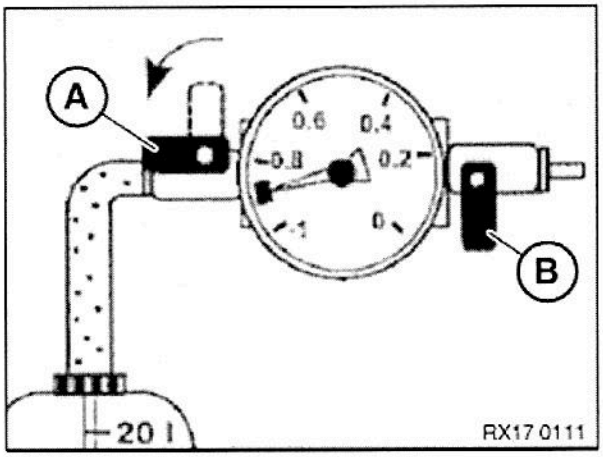


Result

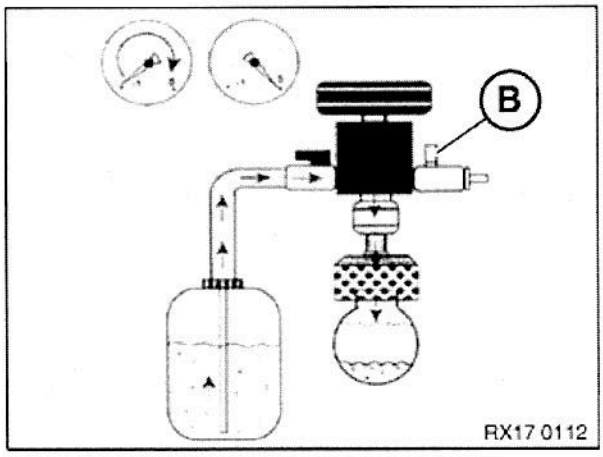
» Vacuum remains constant.

Measure

- Continue with filling.

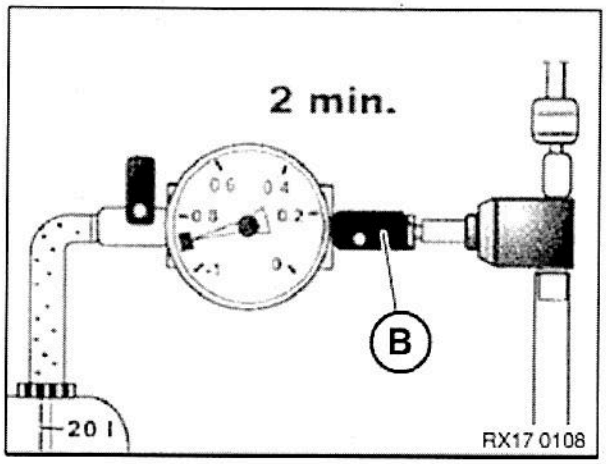


- Keep shutoff valve (B) closed during the filling process.
- To fill the cooling system, open the shutoff valve (A) to the fluid tank of the vacuum filler device.

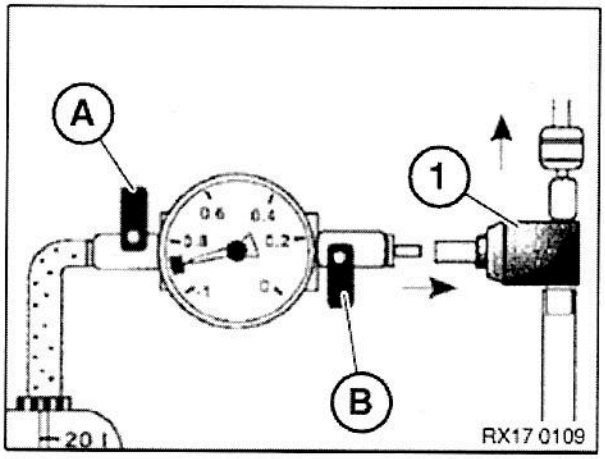


- Stop the filling procedure when the needle in the pressure measuring device is on 0 bar or it no longer drops.
- If necessary, reduce remaining vacuum. Open the shutoff valve (B).

- Remove the vacuum filler device with the adapter from the low-temperature coolant expansion tank (1).

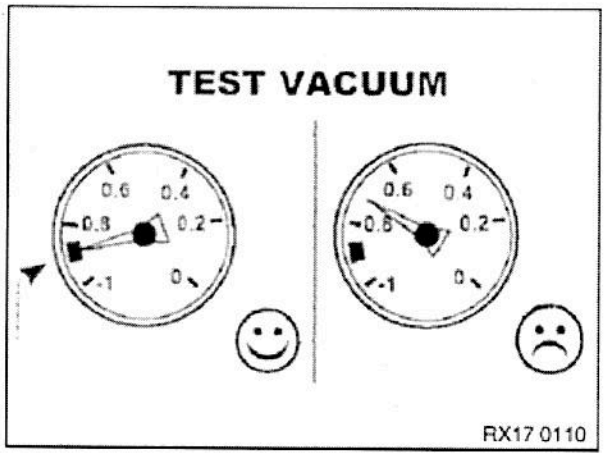


- After having established a vacuum in the coolant circuit of between -0.7 to -0.95 bar (duration approximately 2 min), close the shutoff valve (B).



- Check whether the shutoff valves (A) and (B) are closed.
- Disconnect the Venturi nozzle (1).

Check



- The vacuum in the coolant circuit must be maintained for at least 30 seconds.

Result

» Vacuum drops.

Measure

- Look for the leak, repair it and start the filling procedure from the beginning.

Check

- The vacuum in the coolant circuit must be maintained for at least 30 seconds.

[redacted]

Check the cooling system for watertightness with the special tool (with a tester) »

Check the high-temperature cooling system for watertightness

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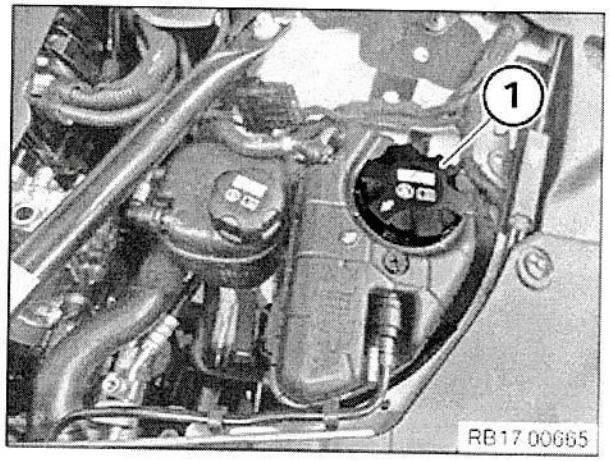
⚠ WARNING

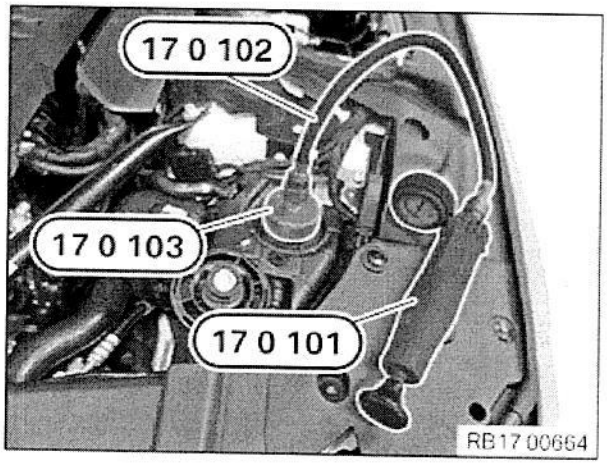
Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.



- Loosen sealing cap (1).

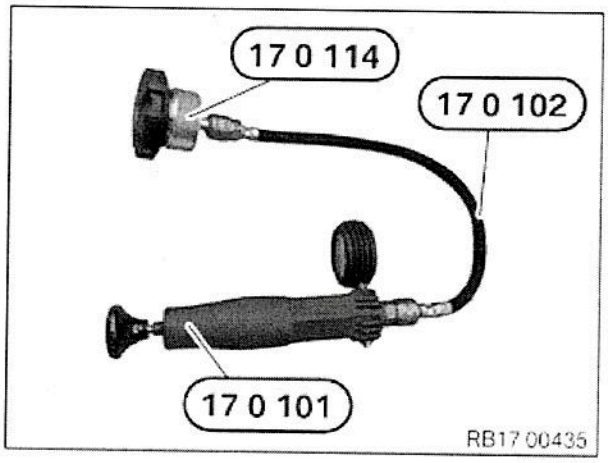


- Attach the special tool **0 494 418 (17 0 101)** with special tools **0 494 419 (17 0 102)** and **0 494 420 (17 0 103)** from the set of special tools **0 494 417 (17 0 100)**.
- Build up excess pressure and wait for approximately 2 minutes.

Technical data

Opening pressure of sealing cap / test pressure of high-temperature coolant circuit cooling system	

	Pressure relief valve opens when the pressure exceeds the ambient pressure. min. 1,4 bar
	Electric changeover valve must open at latest when the pressure is lower than the ambient pressure. max. 0,1 bar
	Test pressure for cooling system (gauge pressure) 1,5 bar



i TECHNICAL INFORMATION

If the described test step is not completed successfully: repeat test step twice. Only replace the sealing cap after three tests with an incorrect opening pressure.

When driving at high ambient temperatures, the design may cause the pressure relief valve in the sealing cap to open slightly and air to escape together with dissolved coolant. This coolant vapour condenses on the surface of the coolant expansion tank and leaves traces of coolant when the vehicle has cooled down. These traces of coolant do not indicate whether the sealing cap is defective or not.

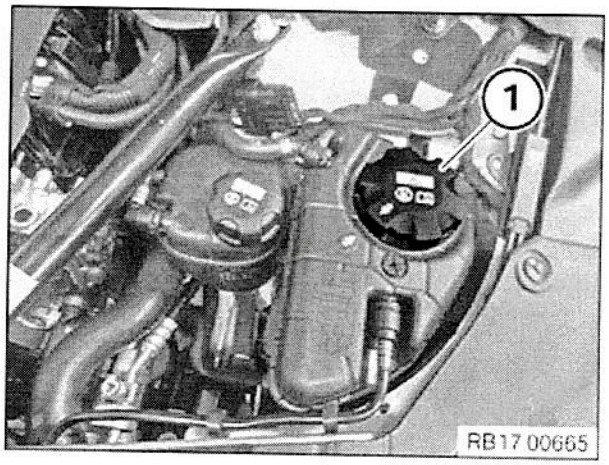
Escaping coolant vapours when the vehicle is at standstill may cause the pressure relief valve to stick to the sealing cap. This may cause an incorrect opening pressure.

- Screw on sealing cap (1) on special tool **0 494 643 (17 0 114)** from the set of special tools **0 494 417 (17 0 100)**.

- Build up the pressure with special tools **0 494 418 (17 0 101)** and **0 494 419 (17 0 102)** from the set of special tools **0 494 417 (17 0 100)**.
- Observe on the pressure measuring device when the opening pressure has been reached.

Technical data

Opening pressure of sealing cap / test pressure of high-temperature coolant circuit cooling system	
Pressure relief valve opens when the pressure exceeds the ambient pressure.	min. 1,4 bar
Electric changeover valve must open at latest when the pressure is lower than the ambient pressure.	max. 0,1 bar
Test pressure for cooling system (gauge pressure)	1,5 bar



- Close sealing cap (1).
- Close the sealing cap (1) until the **arrows** are flush.

[redacted]

Check the cooling system for watertightness with the special tool (with a tester) »

Checking low-temperature cooling system for watertightness

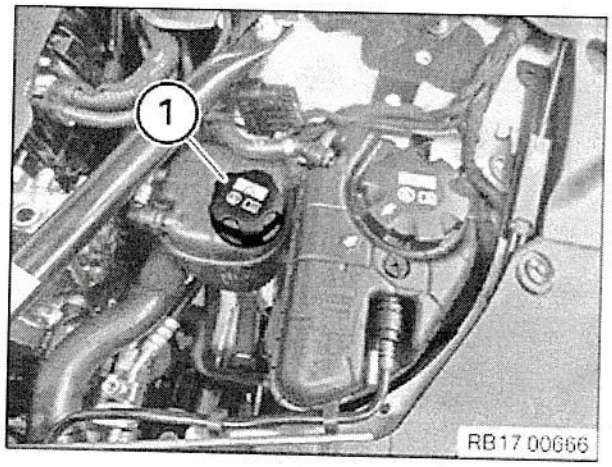
REP-TAT-P-1700-05-G11_B58_2

⚠ WARNING

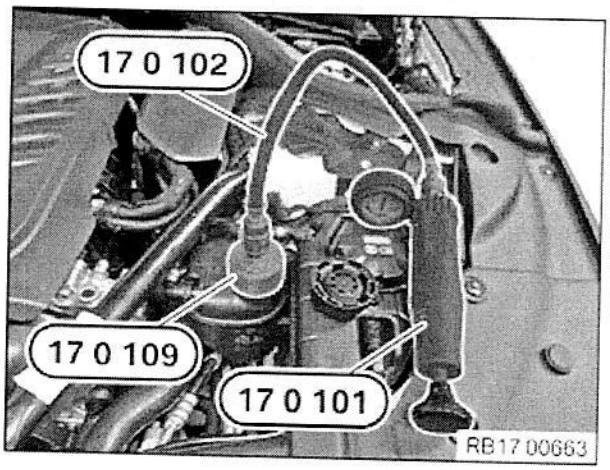
Hot surfaces.

Risk of burning!

- Perform all work only on components that have cooled down.



- Loosen sealing cap (1).

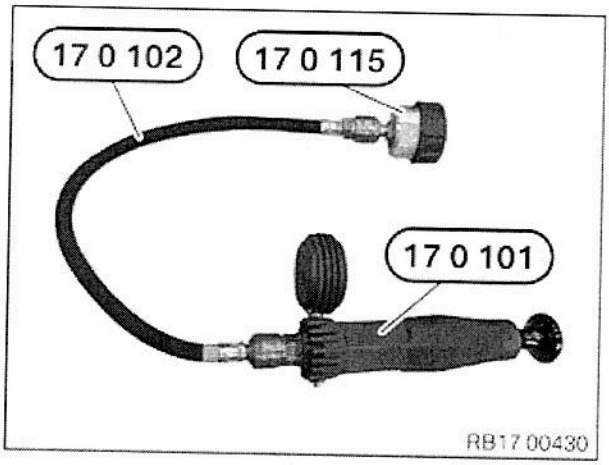


- Attach the special tool **0 494 418 (17 0 101)** with special tools **0 494 419 (17 0 102)** and **0 494 426 (17 0 109)** from the set of special tools **0 494 417 (17 0 100)**.
- Build up excess pressure and wait for approximately 2 minutes.

Technical data

Opening pressure of sealing cap of low-temperature coolant circuit	

	Pressure relief valve opens when the pressure exceeds the ambient pressure. min. 1,4 bar
	Electric changeover valve must open at latest when the pressure is lower than the ambient pressure max. 0,1 bar
	Test pressure for cooling system (gauge pressure) 1,5 bar



i TECHNICAL INFORMATION

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When driving at high ambient temperatures, the design may cause the pressure relief valve in the sealing cap to open slightly and air to escape together with dissolved coolant. This coolant vapour condenses on the surface of the coolant expansion tank and leaves traces of coolant when the vehicle has cooled down. These traces of coolant do not indicate whether the sealing cap is defective or not.

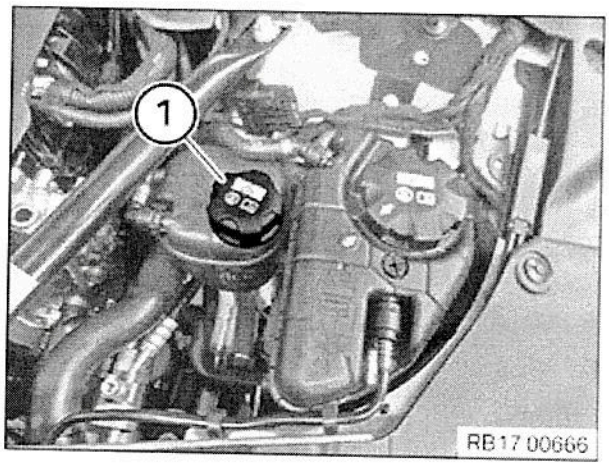
Escaping coolant vapours when the vehicle is at standstill may cause the pressure relief valve to stick to the sealing cap. This may cause an incorrect opening pressure.

- Screw on sealing cap (1) on special tool **0 495 889 (17 0 115)** from the set of special tools **0 494 417 (17 0 100)**.

- Build up the pressure with special tools **0 494 418 (17 0 101)** and **0 494 419 (17 0 102)** from the set of special tools **0 494 417 (17 0 100)**.
- Observe on the pressure measuring device when the opening pressure has been reached.

Technical data

Opening pressure of sealing cap of low-temperature coolant circuit	
Pressure relief valve opens when the pressure exceeds the ambient pressure.	min. 1,4 bar
Electric changeover valve must open at latest when the pressure is lower than the ambient pressure	max. 0,1 bar
Test pressure for cooling system (gauge pressure)	1,5 bar



- Close sealing cap (1).